

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-18 remain in the application.

In the section entitled "Claim Rejections - 35 USC § 103" on pages 2-7 of the above-mentioned Office action, claims 1-18 have been rejected as being unpatentable over Rubinstein (US Pat. No. 5,077,686) in view of Barbera et al. (US Pat. No. 5,479,648) under 35 U.S.C. § 103(a); claims 1-18 have been rejected as being unpatentable over Rubinstein in view of Nguyen et al. (US Pat. No. 5,321,698) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for:

A device for synchronizing processes which run on a plurality of units including a central unit linked with other units via a field bus, comprising:

a device provided in the central unit for producing a system clock;

a vacant line provided in the field bus for distributing said system clock to the other units;

a clock generator or transmitter provided in the other units; and

respective multiplication devices located at the other units for multiplying said system clock.

Claim 10 calls for, inter alia:

generating a system clock in the central unit;

generating module clocks in the other units; and

providing the system clock, which has been produced in the central unit, for synchronizing the module clock which has been produced in the other units.

The Examiner has admitted that Rubinstein does not teach local clock generating modules as claimed in claims 1 and 10 of the instant application. However, the Examiner has combined Barbera et al. or Nguyen et al. with Rubinstein in order to render the invention of the instant application obvious.

First of all, Applicants would like to recall the subject matter of claims 1 and 10 of the instant application, which disclose an apparatus and a method for synchronizing processes in a plurality of local units including a central

clock generator for synchronizing the local units and clock generators in the local units.

As already discussed in the response to the previous Office action, Rubinstein only teaches one central clock generator 201 and frequency multipliers connected to a central clock unit. The central clock unit synchronizes all processors in a computer system, which results in failure of the whole computer system in case the central clock generator 201 stops working. This is very important in view of the Examiner's opinion concerning claim 13 of the instant application that Rubinstein teaches driving down the processes led by the module clocks upon failure of the system clock. The cited paragraphs in columns 7 and 8 of Rubinstein do not teach such subject matter because there is only one central clock generator the output signal of which is multiplied for different units and processes. That means again that if the central clock generator stops working all processors connected to the central clock generator stop working, too. Applicants cannot find any failure scenario in the two paragraphs in columns 7 and 8 giving any hint to processes that can be driven down by local module clocks. That is not quite a surprise because Rubinstein is only related to computer systems like PCs and laptops having only one clock generator and not any local clock generators.

Additionally, the Examiner has introduced Barbera et al. which is related, according to column 1, lines 8-10 thereof, to an apparatus and a method for switching clock signals in a fault-tolerant synchronous computer system. In order to understand Barbera et al., it is important to bear in mind the wording "switching clock signals." Switching clock signals means the switch-over between at least two clock signals, which does not necessarily require synchronization of the clock signals to be switched. According to Barbera et al., there is provided a computer system with a central system clock generator and local clock units. The local clock units are provided to offer the opportunity to the user to switch off the central clock generator in order to save power. It is the object of Barbera et al. to provide a method in such an apparatus for uninterrupted operation and switching between the local clock units and the central system clock generator. According to column 1, lines 53-56, it is important that the stream of clock signals is not interrupted and the signals are switched. The synchronizing and sequencing in column 1, lines 65-66 are related to the power-down and power-up process and switching from the main clock generator to the auxiliary local clock generating units.

Any synchronization only happens during the switching process. According to column 2, lines 40-43, of Barbera et al., the components are supplied either by the main system clock unit or by the local clock unit, but never at the same time by both units. This is a big difference from the invention according to claims 1 and 10 of the instant application in which since the central clock unit synchronizes the other units by the system clock and at the same time the other units, the local clock generators produce their local clock signals that are synchronized by the main system clock. In the invention of the instant application, all clock generators work in parallel and are synchronized while working. Additionally, according to column 5, lines 43-49, Barbera et al. only teach the use of a sequence of system clocks because either the system or the local clock signals are present at the outputs of the distributing multiplier and only one signal is selected for propagation to the respective components.

Nguyen et al. teach a computer system equipped with checkpoint recovery to provide for safer operations. In column 7, lines 42-55, Nguyen et al. mention a computer system with a system clock generator 110 and a recovery control platform 160 (ReCoP). The ReCoP is clocked by an independent clock generator 161. However, according to the description, again all components of the computer systems only operate in

synchronism with one of the clock generators 110, 161, whereas the invention of the instant application, according to claims 1 and 10, is related to the synchronization of the central clock generator and the local clock generator which means that the local components are being clocked by the local clock generators and are being synchronized at the same time by the central clock generator. According to column 9, lines 5-25, a shut-off mechanism disconnects the supplier of the clock generator 110 when certain errors occur. Since the ReCoP unit 160 is independently clocked, of course, this unit continues working. However, there is no synchronization provided between the clock generator 110 and the ReCoP 160. According to the description of Nguyen et al., both clock generators work independently all the time. This means that Nguyen et al. also do not teach to use local clock units being synchronized by a central clock unit.

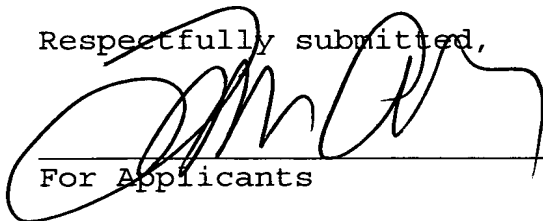
It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claims 1 and 10. Claims 1 and 10 are, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claims 1 or 10, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-18 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



For Applicants

LAURENCE A. GREENBERG  
REG. NO. 29,308

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Lerner and Greenberg, P.A.  
Post Office Box 2480  
Hollywood, FL 33022-2480  
Tel: (954) 925-1100  
Fax: (954) 925-1101